

In the claims:

Please cancel the second set of claims 54 and 55 without prejudice, and replace claims 1, 9, 13, 14, 16, 17, 21, 22, 24, 25, 27, 42, 43, 50, 54, 58 and 60 with the following replacement claims 1, 9, 13, 14, 16, 17, 21, 22, 24, 25, 27, 42, 43, 50, 54, 58 and 60:

05 1. **(Amended)** An isolated and/or recombinant cell- or tissue-specific F-box protein having an amino acid sequence that is at least 75% identical or homologous to SEQ ID NO: 2.

06 9. **(Amended)** The isolated and/or recombinant cell- or tissue-specific F-box protein of claim 1, which polypeptide is at least 90 % homologous to the amino acid sequence set forth in SEQ ID NO: 2.

07 13. **(Amended)** An isolated nucleic acid comprising a nucleotide sequence encoding a cell- or tissue-specific F-box polypeptide of claim 3 or a portion thereof, or a nucleotide sequence complementary thereto.

14. **(Amended)** An isolated nucleic acid that hybridizes under stringent conditions to a nucleic acid comprising nucleotide sequence set forth in SEQ ID NO: 1, or a sequence complementary thereto.

08 16. **(Amended)** An isolated nucleic acid of claim 14 comprising a nucleotide sequence encoding a vertebrate cell- or tissue-specific F-box polypeptide.

17. **(Amended)** The nucleic acid of claim 14, further comprising a transcriptional regulatory sequence operably linked to said nucleotide sequence so as to render said nucleic acid suitable for use as an expression vector.

09 21. **(Amended)** A transgenic animal having cells which harbor a transgene comprising the nucleic acid of claim 14, or in which a gene comprising said nucleic acid is disrupted.

22. **(Amended)** The isolated nucleic acid of claim of claim 14 which selectively hybridizes under high stringency conditions to at least ten nucleotides of the sequence set forth in Figure 5A or complementary sequences thereof, which nucleic acid can specifically detect or amplify a nucleic acid sequence of a vertebrate cell- or tissue-specific F-box gene.

24. (Amended) A reconstituted protein mixture comprising the cell- or tissue-specific F-box polypeptide of claim 1 and a substrate protein.

25. (Amended) The reconstituted protein mixture of claim 24, wherein the cell- or tissue-specific F-box polypeptide is atrofin-1 comprising SEQ ID NO: 2.

27. (Amended) An assay for identifying an inhibitor of cell- or tissue-specific F-box protein-mediated ubiquitination, comprising:

- (i) providing a ubiquitin-conjugating system including a substrate polypeptide, an SCF complex including one or more cell- or tissue-specific F-box polypeptides of claim 1 and ubiquitin, under conditions which promote ubiquitination of the substrate polypeptide by the SCF complex;
- (ii) contacting the ubiquitin-conjugating system with a candidate agent;
- (iii) measuring a level of ubiquitination of the substrate polypeptide in the presence of the candidate agent; and
- (iv) comparing the measured level of ubiquitination in the presence of the candidate agent with ubiquitination of the substrate polypeptide in the absence of the candidate agent,

wherein a statistically significant decrease in ubiquitination of the substrate polypeptide in the presence of the candidate agent is indicative of an inhibitor of cell- or tissue-specific F-box protein-mediated ubiquitination.

42. (Amended) An assay for identifying an inhibitor of an interaction between a substrate polypeptide and an SCF complex including a cell- or tissue-specific F-box protein, comprising:

- (i) providing a reaction system including the substrate polypeptide and an SCF complex including a cell- or tissue-specific F-box protein of claim 1, wherein the substrate polypeptide and the SCF complex interact;
- (ii) contacting the reaction system with a candidate agent;
- (iii) measuring formation of complexes containing the substrate polypeptide and the SCF complex in the presence of the candidate agent; and
- (iv) comparing the measured formation of complexes in the presence of the candidate agent with complexes formed in the absence of the candidate agent,

wherein a statistically significant decrease in the formation of complexes in the presence of the candidate agent is indicative of an inhibitor of the interaction of the substrate polypeptide and the SCF complex.

43. (Amended) The assay of claim 42, wherein the cell- or tissue-specific F-box protein is atrophin-1 comprising SEQ ID NO: 2.

50. (Amended) A method for diagnosing a muscle wasting disorder in a patient, comprising:

(i) ascertaining the level of expression of an F-box polypeptide of claim 1 comprising the sequence set forth in Figure 5B in a sample of muscle cells from the patient; and

(ii) diagnosing the presence or absence of a muscle wasting disorder utilizing, at least in part, the ascertained level of expression or activity of the F-box polypeptide;

wherein an increased level of expression of the F-box polypeptide or F-box polypeptide-dependent ubiquitination activity in the sample, relative to a control sample of non-muscle cells, correlates with the presence of a muscle wasting disorder.

54. (Amended) A method for treating a subject suffering from a muscle wasting disorder or for maintaining or increasing the muscle mass of a subject, comprising administering to the subject an amount of an atrophin-1 inhibitor identified by the method of claim 42 effective to inhibit the expression and/or activity of atrophin-1.

58. (Amended) A method for stimulating the proliferation of muscle stem cells, comprising contacting the stem cells with a compound capable of inhibiting the expression and/or activity of atrophin-1 and identified according to the method of claim 42.

60. (Amended) A method for inhibiting protein degradation in muscle tissue of a patient without substantially affecting protein degradation in other tissues, comprising administering to the patient an amount of an atrophin-1 inhibitor identified by the method of claim 42 effective to inhibit the expression and/or activity of atrophin-1.